CONCERNING SPECIES, WITH NOTES ON PHYTODECTA AFFINIS GYLL. AND PALLIDUS LINN.

By Howard Notman, Brooklyn, N. Y.

Any rule whose operation will surely decide whether two forms are to be considered distinct species or not is obviously of the greatest interest and importance to the student of insects. Most pleasing and, superficially at least, exact in this respect is the rule which draws the line between forms and species by the breeding test—that is, that the offspring of any given female must be considered homogeneous. It is curious that this idea should maintain itself in spite of its evident conflict with the prevailing doctrines of evolution. Moreover, although apparently exact and final in its operation, closer study shows its effect to be inimical to a careful observation of facts in that it tends to destroy confidence in their systematic significance.

Study of inherited variation seems to have shown conclusively that certain characters called dominant appear in a larger proportion of the second generation, where two more or less distinct varieties are crossed. Is it, therefore, altogether impossible that the sexual identity of a species is a dominant character, in which case the corresponding recessive character would be fertile sexual union with closely allied species? The females produced from such a union might well produce offspring referable to either species.

The logic of this suggestion would seem beyond criticism. The following facts observed in the field are presented as of interest in connection with it.

While collecting insects in a meadow at Keene Valley, N. Y., which was partly overgrown with small poplars and willows, the writer's attention was attracted by small reddish, black-spotted chrysomelid beetles which were to be found in numbers on the trees mentioned. Interest was first aroused by the great variability in the marking both on the elytra and the thorax. Further study showed that, although the beetles found on the two trees were almost identical in form, the thoracic marks of those on the willow were never more than two small black spots, some-

times lacking, and that the thoracic marks of those on the poplars were never less than two rather large triangular basal spots with a small central spot between, these sometimes coalesced and extended to the apical margin forming a solid black discal area, in which case an additional small black spot appears in the pale apico-marginal portion. This led to the conclusion that there might be two species. The poplars and willows in the meadow were closely mixed, and the writer studied the beetles with great care during two summers, but failed to note a single instance of either form occurring on the food plant of the other.

The writer has identified the beetles as *Phytodecta affinis* Gyll.—the willow beetle of which *arcticus* Mann. is said to be a variety—and *Phytodecta* (*Spartophila*) *pallidus* Linn.—the poplar beetle. In the Junk *Catalogus* they are placed in different subgenera, distinguished by a slight difference in the prominence of the tooth at the apex of the front tibiae and the number of the thoracic setae.

> Thorax with setae at the posterior angles only. All the tibiae strongly toothed at apex.....*Phytodecta.*
> Thorax with setae at anterior and posterior angles. Anterior tibiae scarcely toothed at apex.....*Spartophila.*
> (Kuhnt, Illus. Bes. Tab. Käf. Deuts., p. 848.)

Drawings of the oedagus of these and the other species of the genus are given in a plate published in the Deutsche Entomologische Zeitschrift. (XXX, 1886, p. 26, taf. I. ff. 42, 47.) The writer has dissected the oedagus from males of the two species and finds them in accord with the drawings. There is considerable difference in the form. In *affinis* the oedagus is slender and rather acuminate; in *pallidus* it is larger at the apex and broadly rounded.

The eggs of the beetles are laid in clusters on the leaves of the food plant and the larvae in their early stages feed in groups. Several of these groups were raised to maturity. Those of the poplar beetle—*pallidus*—exhibited nothing worthy of special note. A group of eight raised on willow were remarkable in that the thoracic marking of four of the specimens was that of the poplar beetle, *pallidus,* the others being typical *affinis.* The eight indi-

viduals are somewhat undersized and have soft elytra, due perhaps to lack of skill in rearing. The writer feels certain that these are the offspring of a single female.

That the reproductive function in these beetles is not altogether normal is indicated by the following field note, which is repeated verbatim: "Several days ago I placed in a glass some beetles (*affinis*) taken on willows. After an examination this morning (May 25) I found a number of the small larvae just hatched and in addition three unhatched eggs. They are about one millimeter in length, translucent and of a coral red color. Two of these eggs have hatched during the morning and the third is almost ready to. The formation of the young larva is very rapid. The color is somewhat dull just before hatching. The young larva is of a translucent red; the head and legs being colorless and transparent. The eggs are cylindrical in shape, rounded at the ends and about twice as long as broad. They are gelatinous and without a hard shell; the skin yielding to the outline of the larva as it forms within. Several eggs were laid upon the cork of a vial which hatched out within an hour. They were attached by one end so as to stand in a vertical position. The head of the larva developed at the upper end. The larvae turn black shortly and the thoracic segment may then be distinguished from the others even before the first moult. I have just seen a female lay two of these eggs, in both instances the embryo larva was visible as soon as the egg was completely expelled from the body of the parent. The embryo in one case freed the head and thoracic segments of its body from the sac in which it was born within five minutes and was entirely out within ten minutes from the moment of expulsion." It is evident that on occasion it would be proper to call this species viviparous.

The following record was made of a group of 29 larvae found on poplar: The group was first observed on May 13, probably shortly after hatching. The first moult took place on May 18, the larvae then being 1.75 mm. long; the second moult on May 22, the larvae then being 4.25 mm. long; the third on May 25, the larvae then being 7 mm. long. On May 29 the larvae stopped feeding. They began transforming to chrysalids on June 8 and

on June 15 there were 16 chrysalids. Ten had died without transforming. Two were drowned and one was crushed. On June 20 the first adult beetle appeared. (*Phytodecta pallidus* Linn.)

NEW THYSANOPTERA FROM NEW YORK.

By J. R. Watson, Gainesville, Fla.

A small collection of thrips captured in the Adirondacks and about Syracuse during the summer of 1919 by Prof. Carl J. Drake, of the New York State College of Forestry, was submitted to the author for identification, as was also a large series of a single species collected about Syracuse in 1920 by Miss Evelyn Osborn, Professor of Entomology in the School of Agriculture of Syracuse University. Among these are four undescribed species.

Trichothrips drakei n. sp.

Female: Apterous. General color dark brown. Intermediate antennal segments, tarsi, and tibiae lighter brown. *Measurements:* Total body length 2.8 mm. (2.4 to 2.9 mm.); head—length 0.35 mm., width 0.25 mm.; prothorax—length 0.25 mm., width including coxae 0.51 mm.; metathorax—width 0.57 mm.; abdomen—greatest width 0.73 mm.; tube—length 0.31 mm., width at base 0.11 mm., at apex 0.052 mm. Antennae—total length 0.74 mm.;

Segment	1	2	3	4	5	6	7	8	
Length	73	73	120	109	98	87	70	52	
Width	57	39	43	40	36	35	30	20	microns.

Head about 1.75 times as long as wide, widest behind the eyes and converging posteriorly; cheeks slightly arched, bearing a few thick, heavy bristles arising from low, wart-like protuberances; postocular bristles long, reaching beyond the anterior margins of the eyes. *Eyes* small, sunken, occupying less than a fourth of the length and .6 the width of the head; facets small. *Ocelli* large, reddish brown; anterior situated far forward between the bases of the antennae, facing forward; posterior pair situated opposite the anterior half of the eyes and near, but not touching, their margins. Mouth cone long, reaching fully three-fourths of the way across the